CHAPTER 1

INTRODUCTION

1.1 Overview

The number of hearing problem among Malaysia citizen is very high. Statistics 2005 shows that there are 26294 hearing impaired people in Malaysia (Department of social Welfare Malaysia, 2007). There are hearing aid hearing aids and ALD devices in the market to help these people on their daily activities but mostly are not locally made and expensive. Moreover not all suitable or fits the individual needs and the maintenance cost or installation could be expensive due to no local expertise.

1.2 Objectives

i. To design a prototype of home notification system for hearing impaired people that can fulfill five basic notification system ; notify the house on fire, baby's crying, burglar alarm notification system, to notify someone ringing the door bell and weather starts raining.

ii. To develop fire alarm system when temperature sensor detect heat.

iii. To design wireless communication between the controller and the wrist alert system using Radio Frequency (RF).

iv. Select the suitable wireless medium for the application.

v. To develop a mobile alerter system that fit to the size of human wrist (wrist alerter) and select the suitable output / alert system for hearing impaired users which LCD display and vibrator are the outputs.

vi. To integrate all of the components needed, choose the right controller, compile and do the testing at real time.

vii. To build up the system with the all basic home notification signals at one reasonable cost. The system should be not be more than RM500.

1.3 Scope of Work

The control or working area of the project is being narrowed to an in-door or home environment. Alert signals are connected to a centralized controller box, will be processed and transmitted via a wireless communication link to the wireless wristband device while the communication between signals from sensors and detectors to the controller box are wired. The type of notification signals would be four basic signals such as doorbells, incoming telephone signal, baby monitor, rain detector signal and an extra temperature alarm signal for their safety purpose. Target of users would be the hearing any hearing impaired categories, single, married or old citizen.

In order to achieve the objectives of the projects, need study some several area that related to the project such as the wireless technology, smart house characteristics , microcontrollers, sensor technology and having an interview with the hearing impaired people in order to get the information and to understand their difficulties in the house.

1.4 Project Background

Statistics 2005 shows that there are 26294 hearing impaired people in Malaysia (Department of social Welfare Malaysia, 2007) Many surveys show that one out of ten people suffers from hearing loss and would benefit from using hearing aids. Nobody knows the exact number of hearing-impaired people, but most estimates set the figure around 500 million. (Hear-it.org, 2007)**.** Unfortunately, most of the home appliance products today are meant for normal people and it is not user friendly for the

handicapped people generally. It is not denied there are hearing aid and Assistive Listening Device (ALD) in the market but there is no best for every body due to large variety of hearing losses and for several basic notification system, the hearing impaired people need to pay an amount of money which is not everybody can afford them. Other than that, the notification system product for hearing impaired on the market are not locally made and have also several disadvantages such as using license frequency where need to pay to the authority, no local expertise if there are problem in installation or troubleshooting. Despite to the growth of wireless communication, unlicensed RF is still being used due to one of the cheapest wireless system, where there's no third party involved such as GSM and GPRS system and suitable for daily notification system.

1.5 Expected result

i. The main controller unit and wrist alert unit able to communicate wireless.

ii. All the inputs sensors or input signals should be functioning and able to communicate with the main controller unit.

iii. The LCD could display the output according to the situations.

iv. The main controller able to differentiate and send the output data according to the priority of the signals.

v. The wrist alert unit should not very big and can be worn by the users.

vi. The total cost should be at reasonable price.